GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Energy Department – Formulation of Andhra Pradesh Green Hydrogen & Green Ammonia Policy – 2023- Orders- Issued.

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ENERGY (POWER.II) DEPARTMENT

G.O.Ms.No.14 **Dated:20.06.2023**
Read the following:-

O R D E R:-

Government hereby notify the following Andhra Pradesh Green Hydrogen & Green Ammonia Policy – 2023 for promotion of Green Hydrogen and Green Ammonia production in Andhra Pradesh State.

ANDHRA PRADESH GREEN HYDROGEN & GREEN AMMONIA POLICY - 2023

1. PREAMBLE

1.1 Today, world is in the midst of a major transition to clean energy due to growing concerns of climate change and global warming. The 2015 Paris agreement, followed by the CoP 26 summit (26th Conference of Parties) held during 2021, under the **United Nations Framework Convention on Climate Change (UNFCCC)** targeted to limit the increase in global warming by 2^{o}C and achieve "**Net Zero**" emissions by the year 2050. Honourable Prime Minister of India, Shri Narendra Modi ji on his part presented "**Panchamrit**" to deal with this challenge and pledged to achieve "**Net Zero** by 2070".

1.2 Five targets under **"Panchamrit"** set up by Government of India for dealing with climate change and global warming are

i. Achieve about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030
ii. Meet 50 percent of energy requirements from Renewable Energy (RE) sources by 2030
iii. Reduce the total projected carbon emissions by one billion tonnes from current level till 2030
iv. Reduce the emission intensity of the GDP by 45% by 2030, from 2005 level
v. Achieve "Net Zero" by 2070

1.3 Hydrogen is emerging as one of the major alternative fuels due to zero carbon content, thereby generating interest in the world about the possibility of manufacturing hydrogen through Renewable Energy (RE). To cut down GHG emissions in sectors such as Oil & Gas, Heavy Industries, and

Transport etc., countries have included production targets of Green Hydrogen in their emission pledges and the industry has recognized the role of Green Hydrogen in achieving respective emission reduction targets. Thus, Green Hydrogen is an important pillar of the net zero economy.

1.4 India's deep interest in Green Hydrogen stems from its energy requirements and from the ability of this fuel to decarbonize high fossil fuel consumption sectors such as refineries, fertilizers, steel, transport etc. Further, India has rapidly brought renewable sources in the energy mix, with around 118 GW of installed capacity as on date. The country can reduce its high dependence on oil imports, which is about 85% of the energy requirements, by utilizing the amply available RE towards the production of Green Hydrogen. This can bring in energy independence by potentially decreasing heavy reliance on fossil fuels and energy imports.

1.5 Recognizing the impact of Green Hydrogen, Government of India (GoI) constituted National Hydrogen Energy Board in 2003. In 2006, Government of India approved the National Hydrogen Energy Road Map, in which technological gaps in different areas of Hydrogen energy were identified and strategy for bridging those gaps were prepared. Further in 2016, the Ministry of New and Renewable Energy (MNRE) published a detailed report that articulated the updated plans for Government of India's (GoI's) ambitions for Hydrogen. In 2022, Government of India (GoI) launched Green Hydrogen and Ammonia Policy that aims to boost the domestic production of Green Hydrogen to **5 Million Tonnes Per Annum (MTPA) by 2030** and to make India **"an export hub"** for this clean fuel.

1.6 Andhra Pradesh has been playing a pivotal role in supporting Government of India's various initiatives in the energy domain and has been rolling out several initiatives such as investor friendly solar and wind power policies, development of large-scale solar park(s) and green corridors for power evacuation and providing land for accelerating development of RE sector in the State.

1.7 The State Government, in order to encourage, develop, popularize and promote Green Hydrogen production plants by investors, decided to notify **"Andhra Pradesh Green Hydrogen/Green Ammonia Policy - 2023"** to mitigate the carbon emissions and ensure sustainable future.

2. DEFINITIONS

i. **Electrolyser:** Electrolyser is a system or device that uses electricity to split water molecules into hydrogen and oxygen, thereby producing hydrogen gas as a sustainable source of clean energy

ii. **Fuel Cell:** A fuel cell is an electrochemical cell that converts the chemical energy of a fuel and an oxidizing agent (often oxygen) into electricity through a pair of redox reactions

iii. **Green Hydrogen/Ammonia:** Green Hydrogen/Ammonia are produced by the process of electrolysis of water using renewable energy. Biomass based hydrogen, produced using pyrolysis of biogas or other biomass products, is also classified as green hydrogen.

iv. **Net Zero:** Net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere by oceans and forests, for instance.

v. **Nitrogenous (N) Fertilizers**: Nitrogenous Fertilizer refers to one of the most common categories of fertilizers produced out of nitrogen (N) chemical combinations. In N-fertilizers, the nitrogen percentage is more significant than any other nutrient in the compound.

3. OBJECTIVES

i. To target Green Hydrogen production up to the capacity of **0.5 MTPA** (Million Tonnes Per Annum) or Green Ammonia production up to the capacity of **2.0 MTPA** in the next five years by harnessing the RE potential in the State

ii. To support the development of eco-system for Green Hydrogen/Green Ammonia production

iii. To attract investments, provide employment and improve the economy of the State

iv. To create **12,000 jobs** per Million Tonne Per Annum (MTPA) production of Green Hydrogen in the State

v. To **promote setting up** of Green Hydrogen and Green Ammonia and its related **equipment manufacturing facilities** in the State

vi. To make Andhra Pradesh the preferred destination for **production and export** of Green Hydrogen/Green Ammonia

OPERATIVE PERIOD

This policy will be known as **"Andhra Pradesh Green Hydrogen/Green Ammonia Policy – 2023"** and shall come into operation with effect from the date of issuance and shall remain applicable for a period of five (5) years and/ or shall remain in force till such time a new policy is issued.

Green Hydrogen/Green Ammonia production plants that are commissioned in the State during the operative period shall be eligible for incentives declared under this policy.

5. ELIGIBLE DEVELOPERS

The developers who wish to produce Green Hydrogen/Green Ammonia by way of electrolysis of water using Renewable Energy in the State and the Green Hydrogen/Green Ammonia produced from biomass.

6. DEMAND FOR GREEN HYDROGEN IN THE STATE

The current hydrogen demand in the State stands at around 0.34 MTPA, primarily used in the N-fertilisers, and demand of around 0.13 MTPA in the refinery sector. Future demand for Green Hydrogen is subject to the expected growth in the hydrogen consuming sectors. The Nodal Agency shall publish White Paper on "**Green Hydrogen Investment Opportunity in Andhra Pradesh."**

7. ADVANTAGES FOR INVESTING IN ANDHRA PRADESH

Andhra Pradesh is a vibrant fast-growing economy with investor friendly government in the State. The State has the second longest coastline within the country with 6 operational ports and with new additional ports currently under development for increase of exports. The State has a robust infrastructure of roads and rail for connectivity to major industrial clusters. Andhra Pradesh also has significant water resources from Godavari and Krishna rivers and abundant natural resources.

Also, East Asian Countries are adopting Net Zero strategies and Green Hydrogen is a critical element in Net Zero eco system. For affordable Green Hydrogen, cheaper RE power is essential which is available within our country. Cheaper Green Hydrogen can be produced within State. All the Ports in the State have infrastructure for storing liquid nitrogen which can also be utilized for storing Green Hydrogen for exporting to other countries. This will become cost effective for the end users in other countries.

All the above factors provide an excellent environment for installation of Green Hydrogen/Green Ammonia projects in the State.

8. GREEN HYDROGEN/GREEN AMMONIA PRODUCTION PROJECTS

The State will promote production of Green Hydrogen/Green Ammonia by using Renewable Energy and/or Biomass from any of the following ways:

i. Open access route from co-located or differently located RE plant

ii. Captive route from co-located or differently located RE plant set up by the developer

iii. Third-party sale/ Power exchange

iv. Procuring from APDISCOMs with applicable Green Power charges as determined by APERC

v. A mix of any of the above; provided the source of power is certified by SLDC

9. INCENTIVES FROM THE STATE GOVERNMENT

The following incentives shall be provided for the Green Hydrogen/Green Ammonia projects set up during the policy operative period:

i. **Reimbursement of net SGST revenue from sale of Green Hydrogen/Green Ammonia within the State**

100% reimbursement of net SGST revenue to the developer from sale of Green Hydrogen/ Green Ammonia within the State for a period of five (5) years from commercial operation date (CoD).

ii. **Exemption from Electricity Duty**

100% exemption of Electricity Duty for the power consumed for production of Green Hydrogen/Green Ammonia from RE plants (with or without storage) for a period of five (5) years from CoD.

iii. **Reimbursement of Intra-State Transmission charges for wheeling of power**

25% of Intra-state transmission charges shall be reimbursed to the developer for a period of five (5) years from CoD for the power procured from RE (with or without storage) plants located within the State subject to maximum of INR 10 Lakhs/MW/year of installed electrolyser capacity.

iv. **Reimbursement of Cross-subsidy surcharge**

The cross-subsidy surcharge, as applicable for Energy Intensive Industry category, shall be reimbursed on the energy drawn from RE plants located within the State for production of Green Hydrogen/Green Ammonia for a period of five (5) years from CoD.

v. **Grid Connectivity**

Grid connectivity to Intra-state transmission system at the generation end and production end for RE plants established for production of Green Hydrogen/Green Ammonia shall be granted on priority.

APTRANSCO/APDISCOM(s) will dispose the proposals for the technical feasibility for evacuation within 21 days from the date of receipt of application. Any upstream system strengthening requirement shall be borne by APTRANSCO/APDISCOM(s) on priority basis.

vi. **Renewable Purchase Obligation (RPO)**

As per Green Hydrogen Policy notified by Ministry of Power, Govt. of India on 17th February 2022, Renewable Energy consumed for the

production of Green Hydrogen/ Green Ammonia shall count towards RPO compliance of the consuming entity. The renewable energy consumed beyond the obligation of the producer shall count towards RPO (i.e., Hydro Purchase Obligation or Energy Storage Obligation) compliance of the APDISCOM in whose area the project is located.

vii. **Land allotment**

a. Nodal Agency shall allocate the Government land for development of both RE plants and Green Hydrogen/Green Ammonia Plants on priority basis at lease rate of INR 31,000 per acre per year with an escalation of 5% every two years during the project period. Alternatively, Green Hydrogen/Green Ammonia plants can also be developed in any of the proposed industrial zones/parks as per prevailing policies.

b. Green Hydrogen/Green Ammonia producers shall be allowed to set up bunkers near Ports for storage of Green Hydrogen/Green Ammonia. The land for storage purpose shall be provided by respective port authorities at applicable charges.

viii. **Land Usage Incentives**

Following incentives shall be provided for Green Hydrogen/Green Ammonia production, consumption, or other elements such as storage or transportation:

a. 100% exemption from payment of land use conversion charges
b. 100% exemption from payment of stamp duty

ix. **Production of Green Hydrogen/Green Ammonia or Fuel Cells and Manufacturing of Green Hydrogen/ Green Ammonia Production Equipment**

The Government intends to promote Green Hydrogen equipment manufacturing facilities that can help to develop the Green Hydrogen eco-system in the State along with Green Hydrogen/Green Ammonia production units and Fuel Cell production units using Green Hydrogen

a. Green Hydrogen/Green Ammonia production units, Fuel Cell production units using Green Hydrogen, Green Hydrogen equipment manufacturing facilities and ancillaries related to Green Hydrogen production equipment shall be treated as eligible industry under the schemes administered by the Industries Department and incentives available to industrial units, if any, under such schemes shall be made available

b. The services of single desk portal shall be made available for obtaining time bound statutory clearances for setting up of manufacturing units

x. **Pollution clearance**

Green Hydrogen/Green Ammonia production plants will be exempted from obtaining any NOC/Consent for establishment under pollution control laws from AP Pollution Control Board.

xi. **Other Incentives**

a. The incentives if not modified/changed above, as available under State's solar/wind/wind solar hybrid policy shall be available to the solar/wind/ wind solar hybrid plants to be established for Green Hydrogen/Green Ammonia production

b. Any other incentives as provided by the Central Government for production of Green Hydrogen/ Green Ammonia shall be extended by the Nodal Agency to the Developer without any financial commitment by the State Government

10. STANDARDS FOR GREEN HYDROGEN STORAGE AND TRANSPORTATION

Storage and Transportation of Green hydrogen from production point to end usage is a critical activity in the entire Green Hydrogen eco system and requires careful handling to minimize hydrogen loss and hazardous risks to the people and property. Developer shall comply to the applicable Indian/International standards, viz., Bureau of India Standards (BIS), International Organization for Standardization (ISO), American National Standards Institute (ANSI), Compressed Gas Association (CGA), European Committee for Standardization (CEN) etc. for Green Hydrogen Storage and Transportation. Developers shall also comply with Standards/guidelines notified by Government of India on Storage and Transportation of Green Hydrogen during policy operative period.

11. CHARGES TO BE PAID BY THE DEVELOPERS

Developers shall pay INR 1,00,000 per KTPA of Green Hydrogen/Green Ammonia production capacity as one-time facilitation charges to the Nodal Agency.

12. SKILL DEVELOPMENT INITIATIVES

To create a pipeline of skilled workforce tailored for the needs of Green Hydrogen/ Green Ammonia production, Nodal Agency may undertake following interventions:

i. Facilitate the development of a sustainable green hydrogen/ammonia ecosystem by promoting collaboration among various stakeholders such as academic institutions, renewable energy developers, hydrogen producers, industry consumers, etc.,

ii. Introduce courses related to production of Green Hydrogen/Green Ammonia and manufacturing of Green Hydrogen equipment and its ancillaries in existing Skill Development Centres in the State based on the curriculum developed in coordination with industry using skill gap mapping

iii. Develop digital platform with database of manpower available in the State to match skilled manpower with requirements of manpower in manufacturing of Green Hydrogen equipment/production of Green Hydrogen/ Green Ammonia

iv. Facilitate apprenticeship training for all the eligible students at Green Hydrogen equipment manufacturing plants or Green Hydrogen/Green Ammonia production plants

v. Explore technology demonstration and proof of concept pilots for green hydrogen applications in emerging use cases such as heavy-duty transport, energy storage, etc.,

13. **NODAL AGENCY**

New and Renewable Energy Development Corporation of A.P. Ltd (NREDCAP) shall act as a Nodal Agency under this policy and as decided by the State Government from time to time.

The Nodal Agency and/or designated offices by the Nodal Agency shall be responsible for the following activities:

i. Registration of Green Hydrogen/Green Ammonia production projects

ii. Approval of Green Hydrogen/Green Ammonia production plants along with RE projects

iii. Development of Green Hydrogen/Green Ammonia Production Parks

iv. Facilitate the allotment of Government Land/ acquisition of private land for Green Hydrogen/Green Ammonia projects and provide land near Ports by respective port authorities for storage of Green Hydrogen/Green Ammonia

v. Promote blending of Green Hydrogen in existing N-fertilizer and refinery units in the State

vi. Shall publish a White Paper with detailed analysis on "**Green Hydrogen Investment Opportunity in Andhra Pradesh"**

vii. Facilitate water allocation on priority as per the Industrial Water Supply Policy / Guidelines and subject to guidelines issued by the Water Resources Department

viii. Facilitating execution of Wheeling Agreement with APTRANSCO/APDISCOM(s) (wherever applicable)

ix. Coordinate with MNRE/ Industries Department/ APTRANSCO/ APDISCOM(s) and any other Central/ State agencies in obtaining necessary clearances, approvals, grants, and subsidies

x. Conduct a geological survey to identify potential natural hydrogen storage sites in AP

14. **INTERIM REVIEW**

State Government may undertake an interim review of this policy after a period of two years, or as and when the need arises in view of any technological breakthroughs or to remove any inconsistency with Electricity Act 2003, rules and regulations made there under or any Government of India policy.

15. POWER TO REMOVE DIFFICULTIES

If any difficulty arises in giving effect to this policy, Energy Department is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented for change in any provision.

2. The Vice Chairman & Managing Director, New and Renewable Energy Development Corporation of Andhra Pradesh, Tadepalli shall take necessary action accordingly,

3. This order issues with the concurrence of Finance Dept., vide U.O.No. FIN01-FMU0ASD(IIe)/11/2023, - FMU-IIEIC,Dt.10.04.2023.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

K.VIJAYANAND
SPECIAL CHIEF SECRETARY TO GOVERNMENT

To
The Vice Chairman & Managing Director, New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP), Tadepalli, Guntur Dist.
The Chairman & Managing Director, APTRANSCO, Vidyuth Soudha, Vijayawada.
The Managing Director, APGENCO, Gunadala, Vijayawada.
The Chairman & Managing Director, APSPDCL/ APCPDCL/ APEPDCL.
The Managing Director, APSPCL, Tadepalli, Guntur Dist.
The Chief Commissioner of Land Administration & Special Chief Secretary to Government, APIIC Towers, Mangalagiri.

The Special Chief Secretary to Government, Revenue Department
The Special Chief Secretary to Government, Finance Department
The Special Chief Secretary, Industries & Commerce Department
The Special Chief Secretary to Government, EFS&T Department.
The Principal Secretary to Government, Water Resources Department.
The Commissioner of Industries Department, Vijayawada.

Copy to:
The Secretary to Government of India, Ministry of Power/ MNRE, New Delhi.
All District Collectors.
The P.S to Secretary to Chief Minister.
The P.S., to Minister for Energy, FES & T and Mines & Geology.
The P.S., to the Special Chief Secretary to Government, Energy Department.
SF/SCs.

// FORWARDED ::BY ORDER //

SECTION OFFICER

Signed by Vani Kinthada
Date: 20-06-2023 15:02:08
Reason: Approved